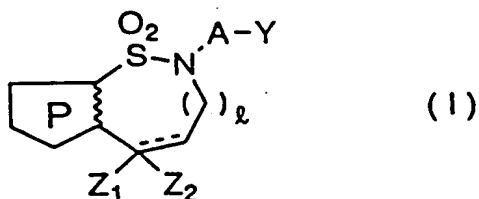


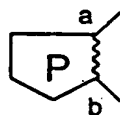
CLAIMS

1. A pyrrolesulfonamide derivative or a salt thereof, said pyrrolesulfonamide derivative being represented by the following formula (I):

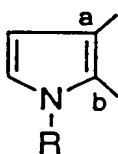


wherein

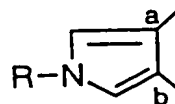
the ring P represented by



means a pyrrole ring represented by the following structure:



or



in which R represents an alkyl group, a cycloalkyl group, a cycloalkyl-alkyl group or a substituted or unsubstituted aralkyl group;

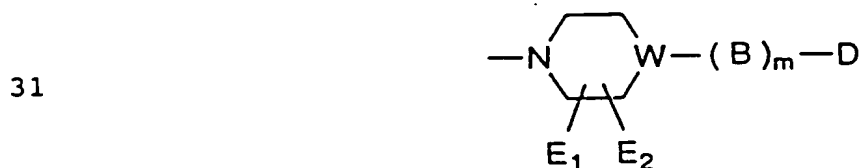
the dashed line indicates the presence or absence of a bond; and, when the bond indicated by the dashed line is present, Z₂ is not present and Z₁ represents a

17 hydrogen atom but, when the bond indicated by the
 18 dashed line is absent, Z_1 represents a hydrogen atom
 19 and Z_2 represents a hydroxyl group; or Z_1 and Z_2 are
 20 combined together to represent an oxygen atom or a
 21 group NOR_1 in which R_1 represents a hydrogen atom, a
 22 substituted or unsubstituted alkyl group, a substituted
 23 or unsubstituted aralkyl group or a substituted or un-
 24 substituted aryl group;

25 l represents 0 or 1;

26 A represents a substituted or unsubstituted
 27 alkylene group, a substituted or unsubstituted
 28 alkenylene group or a substituted or unsubstituted
 29 alkynylene group; and

30 Y represents a group



32 in which W represents CH , $C=$ or a nitrogen atom; and,
 33 when W represents CH , m stands for 0 or 1, B represents
 34 a carbonyl group, a sulfonyl group, an alkylene group,
 35 an alkenylene group, a group $-C(OH)R_2-$ in which R_2
 36 represents a substituted or unsubstituted aryl group, a
 37 group $-CHR_3-$ in which R_3 represents a substituted or
 38 unsubstituted aryl group, or a substituted or un-

39 substituted cyclic or acyclic acetal group; when W
40 represents C=, m stands for 1, B represents a group



42 in which the double bond is coupled with W and R₄
43 represents a substituted or unsubstituted aryl group or
44 a substituted or unsubstituted aralkyl group; when W
45 represents a nitrogen atom, m stands for 0 or 1, and B
46 represents a carbonyl group, a sulfonyl group, an
47 alkylene group, an alkenylene group or a group -CHR₅-
48 in which R₅ represents a substituted or unsubstituted
49 aryl group; E₁ and E₂ each independently represents a
50 hydrogen atom or a lower alkyl group; and D represents
51 a substituted or unsubstituted aromatic hydrocarbon
52 group or a substituted or unsubstituted aromatic
53 heterocyclic group.

1 2. A pyrrolesulfonamide derivative or a salt
2 thereof according to claim 1, wherein in the formula
3 (I), Z₁ represents a hydrogen atom and Z₂ represents a
4 hydroxyl group.

1 3. A pyrrolesulfonamide derivative or a salt
2 thereof according to claim 1, wherein in the formula
3 (I), Z₁ and Z₂ are combined together to represent an
4 oxygen atom or a group NOH.

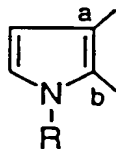
1 4. A pyrrolesulfonamide derivative or a salt

2 thereof according to claim 1, 2 or 3, wherein in the
3 formula (I), A is a trimethylene group.

1 5. A pyrrolesulfonamide derivative or a salt
2 thereof according to claim 1, 2, 3 or 4, wherein in the
3 formula (I), W represents a nitrogen atom, m stands for
4 0, and D represents a substituted or unsubstituted
5 phenyl group.

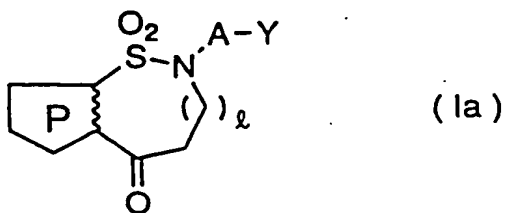
1 6. A pyrrolesulfonamide derivative or a salt
2 thereof according to claim 1, 2, 3, 4 or 5, wherein in
3 the formula (I), E₁ and E₂ both represent hydrogen
4 atoms.

1 7. A pyrrolesulfonamide derivative or a salt
2 thereof according to claim 1, 2, 3, 4, 5 or 6, wherein
3 in the formula (I), the ring P represents the following
4 formula:



6 wherein R has the same meaning as defined above.

1 8. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ia):

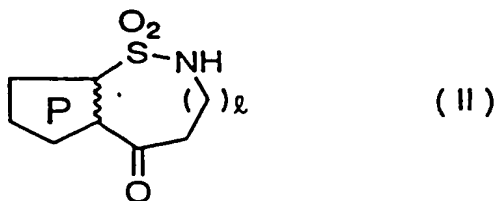


5 wherein A, the ring P, Y and l have the same meanings
6 as defined above, which comprises:

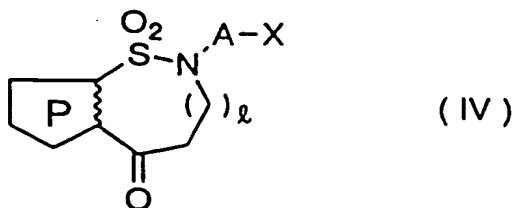
7 reacting a compound, which is represented by the
8 following formula (III):



10 wherein A has the same meaning as defined above and X
11 and X' represent the same or different eliminative
12 groups, to a compound represented by the following for-
13 mula (II):



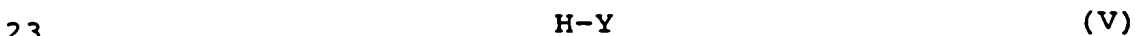
15 wherein the ring P and l have the same meanings as
16 defined above, thereby obtaining a compound represented
17 by the following formula (IV):



19 wherein A, the ring P, X and l have the same meanings

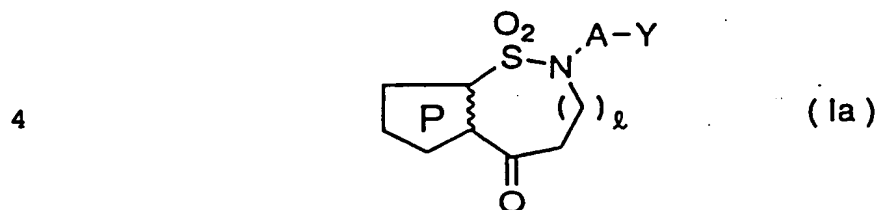
20 as defined above; and then

21 reacting a nitrogen-containing compound
22 represented by the following formula (V):



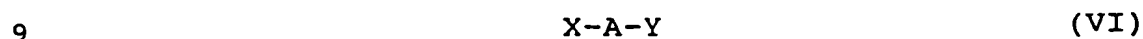
24 wherein Y has the same meaning as defined above.

1 9. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ia):

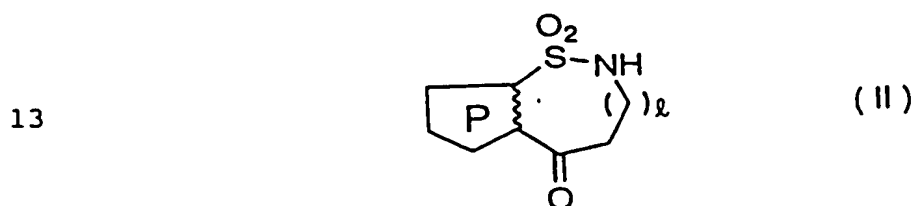


5 wherein A, the ring P, Y and l have the same meanings
6 as defined above, which comprises:

7 reacting a compound, which is represented by the
8 following formula (VI):



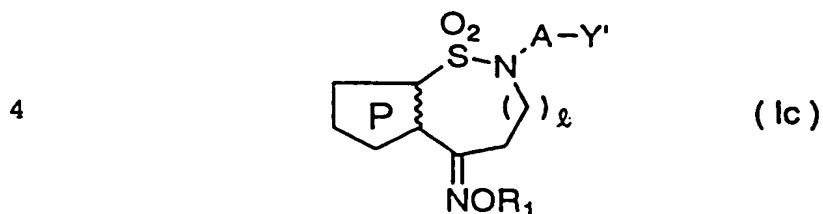
10 wherein A, X and Y have the same meanings as defined
11 above, to a compound represented by the following for-
12 mula (II):



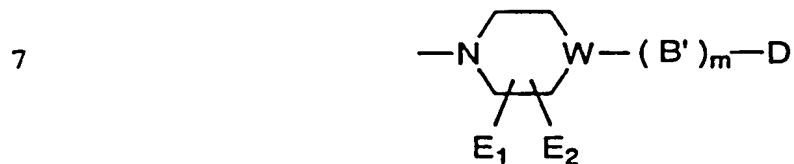
14 wherein the ring P and l have the same meanings as

15 defined above.

1 10. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ic):



5 wherein A, the ring P, R₁ and t have the same meanings
6 as defined above, and Y' represents a group



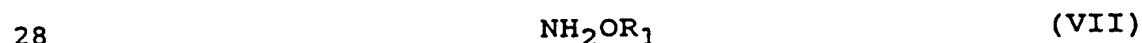
8 in which when W represents CH, B' represents a sulfonyl
9 group, an alkylene group, an alkenylene group, a group
10 -C(OH)R₂- in which R₂ represents a substituted or un-
11 substituted aryl group, a group -CHR₃- in which R₃
12 represents a substituted or unsubstituted aryl group,
13 or a substituted or unsubstituted cyclic or acyclic
14 acetal group; when W represents C=, B' represents a
15 group



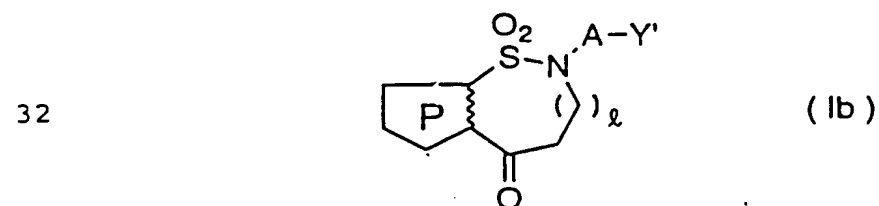
17 in which the double bond is coupled with W and R₄

18 represents a substituted or unsubstituted aryl group or
 19 a substituted or unsubstituted aralkyl group; when W
 20 represents a nitrogen atom, B' represents a carbonyl
 21 group, a sulfonyl group, an alkylene group, an
 22 alkenylene group or a group $-\text{CHR}_5-$ in which R_5
 23 represents a substituted or unsubstituted aryl group;
 24 and D, E_1 , E_2 and m have the same meanings as defined
 25 above, which comprises:

26 reacting a hydroxylamine or a derivative thereof,
 27 which is represented by the following formula (VII):

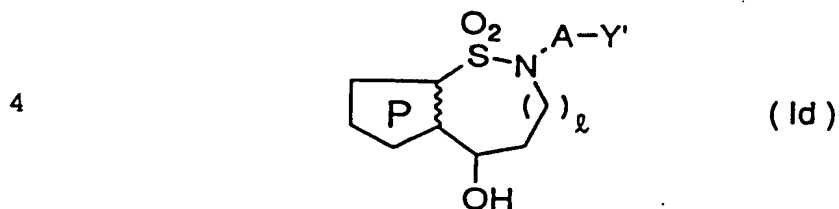


29 wherein R_1 has the same meaning as defined above, with
 30 a pyrrolesulfonamide derivative represented by the fol-
 31 lowing formula (Ib):



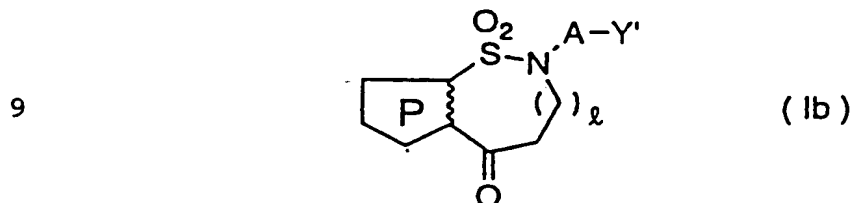
33 wherein A, the ring P, Y' and l have the same meanings
 34 as defined above.

1 11. A process for the preparation of a pyrrole-
 2 sulfonamide derivative represented by the following
 3 formula (Id):



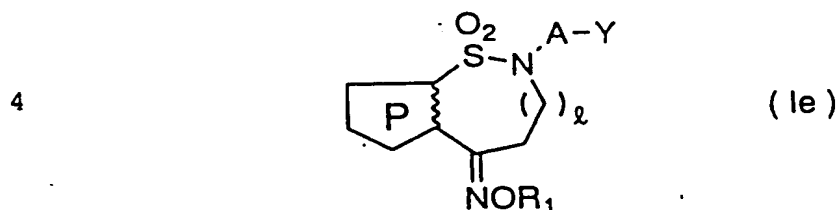
5 wherein A, the ring P, Y' and l have the same meanings
6 as defined above, which comprises:

7 reducing a pyrrolesulfonamide derivative
8 represented by the following formula (Ib):



10 wherein A, the ring P, Y' and l have the same meanings
11 as defined above.

12. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ie):

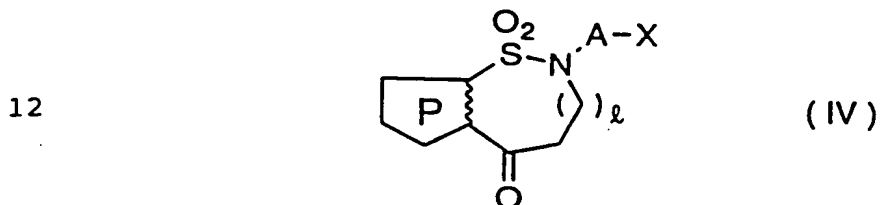


5 wherein A, the ring P, R_1 , Y and l have the same mean-
6 ings as defined above, which comprises:

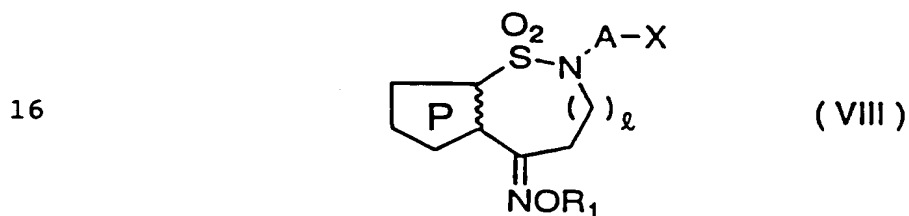
7 reacting a hydroxylamine or a derivative thereof,
8 which is represented by the following formula (VII):

9 NH_2OR_1 (VII)

10 wherein R_1 has the same meaning as defined above, to a
11 compound represented by the following formula (IV):



13 wherein A, the ring P, X and l have the same meanings
14 as defined above, thereby obtaining a compound
15 represented by the following formula (VIII):



17 wherein A, the ring P, R_1 , X and l have the same mean-
18 ings as defined above; and then

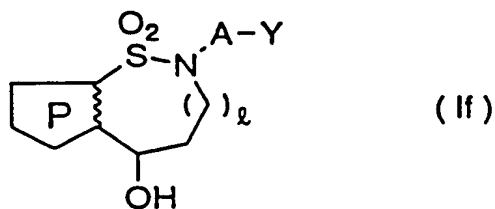
19 reacting a nitrogen-containing compound
20 represented by the following formula (V):

21 H-Y (V)

22 wherein Y has the same meaning as defined above.

1 13. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (If):

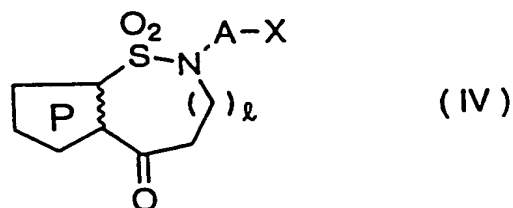
4



5 wherein A, the ring P, Y and l have the same meanings
6 as defined above, which comprises:

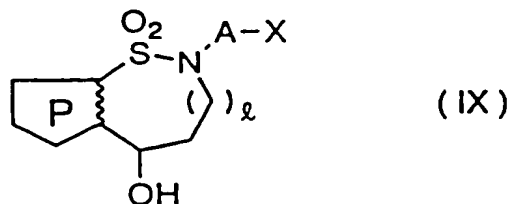
7 reducing a compound represented by the following
8 formula (IV):

9



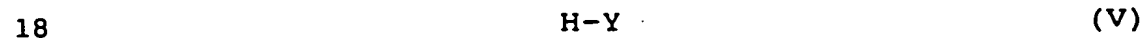
10 wherein A, the ring P, X and l have the same meanings
11 as defined above, thereby obtaining a compound
12 represented by the following formula (IX):

13



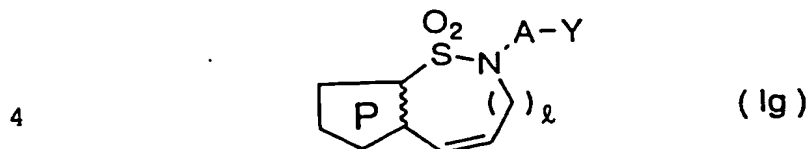
14 wherein A, the ring P, X and l have the same meanings
15 as defined above; and then

16 reacting a nitrogen-containing compound
17 represented by the following formula (V):



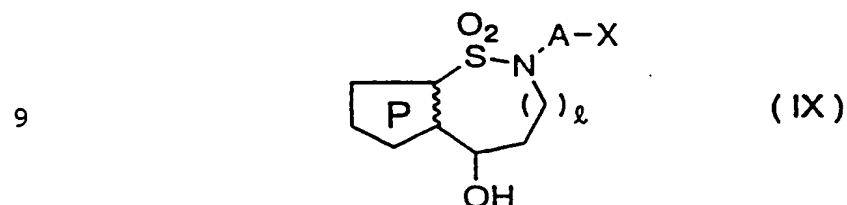
18 wherein Y has the same meaning as defined above.

1 14. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ig):

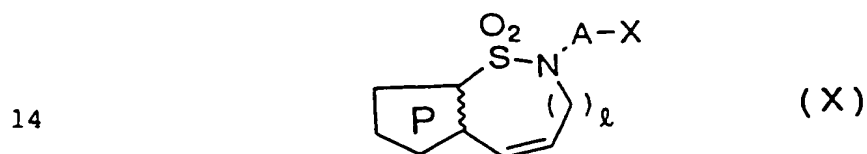


5 wherein A, the ring P, Y and l have the same meanings
6 as defined above, which comprises:

7 subjecting a compound, which is represented by
8 the following formula (IX):



10 wherein A, the ring P, X and l have the same meanings
11 as defined above, to dehydration treatment, thereby ob-
12 taining a compound represented by the following formula
13 (X):

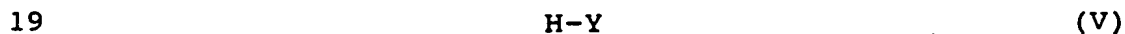


15 wherein A, the ring P, X and l have the same meanings

16 as defined above; and then

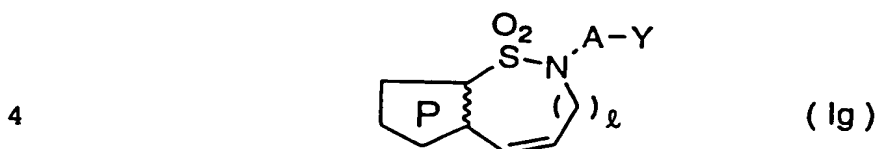
17 reacting a nitrogen-containing compound

18 represented by the following formula (V):



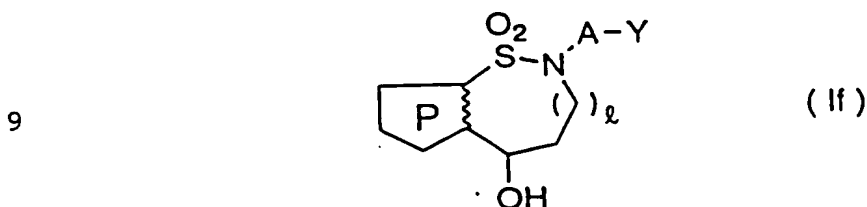
20 wherein Y has the same meaning as defined above.

1 15. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (Ig):



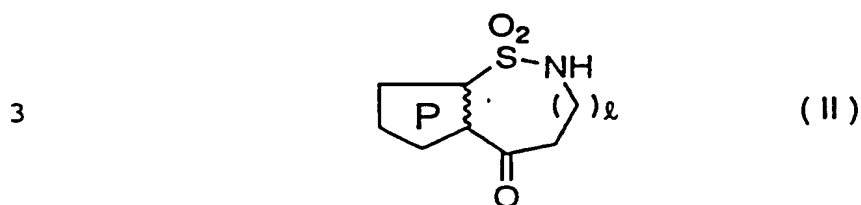
5 wherein A, the ring P, Y and l have the same meanings
6 as defined above, which comprises:

7 subjecting a compound, which is represented by
8 the following formula (If):



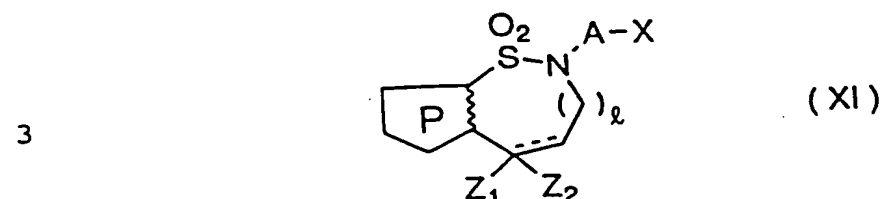
10 wherein A, the ring P, Y and l have the same meanings
11 as defined above, to dehydration treatment.

1 16. A compound represented by the following for-
2 mula (II):



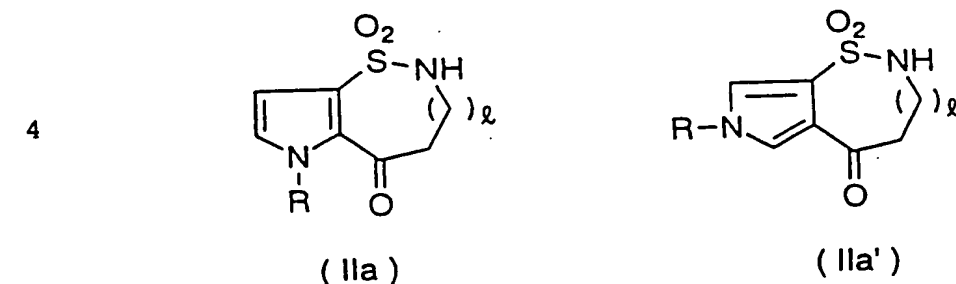
4 wherein the ring P and l have the same meanings as
5 defined above.

1 17. A compound represented by the following for-
2 mula (XI):



4 wherein the dashed line, A, the ring P, X, Z_1 , Z_2 and
5 l have the same meanings as defined above.

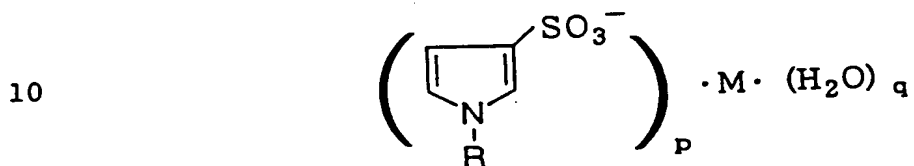
1 18. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (IIa) or (IIa'):



5 wherein R and l have the same meanings as defined
6 above, which comprises:

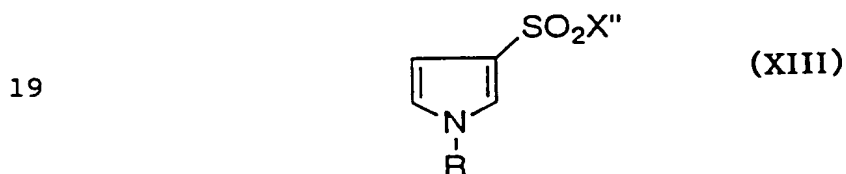
7 converting a 1-substituted-pyrrole-3-sulfonic

8 acid or a salt thereof, which is represented by the
9 following formula (XII):



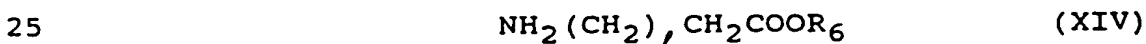
(XII)

11 wherein M represents a hydrogen ion, an alkali metal
12 ion, an alkaline earth metal ion or a quaternary am-
13 monium ion, p stands for 1 when M represents a hydrogen
14 ion, an alkali metal ion or a quaternary ammonium ion
15 or p stands for 2 when M represents an alkaline earth
16 metal ion, q stands for 0 or 1, and R has the same
17 meaning as defined above, into a compound represented
18 by the following formula (XIII):



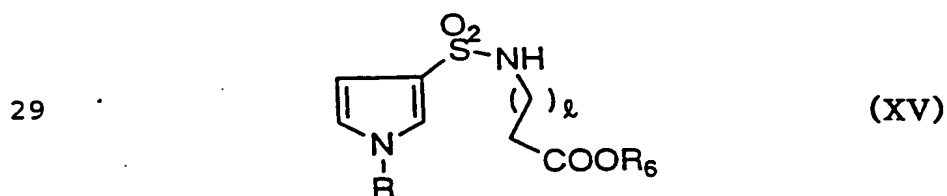
20 wherein X'' represents a chlorine atom or a bromine
21 atom;

22 causing glycine or β -alanine or a derivative
23 thereof, which is represented by the following formula
24 (XIV):



26 wherein R_6 represents a hydrogen atom or a carboxyl-

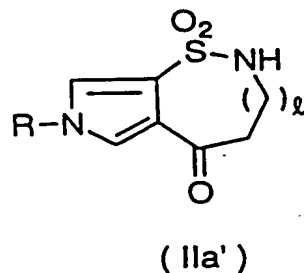
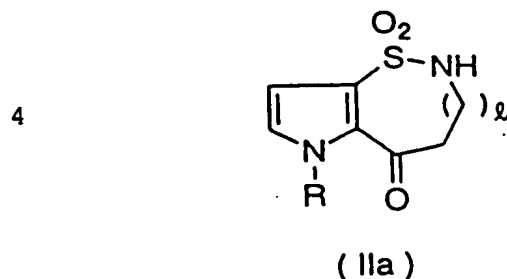
27 protecting group, to act, thereby obtaining a compound
28 represented by the following formula (XV):



30 wherein R, R₆ and l have the same meanings as defined
31 above; and then

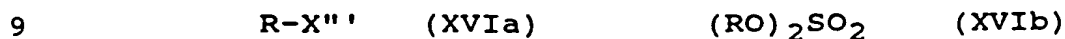
32 subjecting said compound to ring closure.

1 19. A process for the preparation of a pyrrole-
2 sulfonamide derivative represented by the following
3 formula (IIa) or (IIa'):



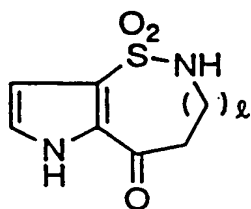
5 wherein R and l have the same meanings as defined
6 above, which comprises:

7 reacting a compound, which is represented by the
8 formula (XVIa) or (XVIb):

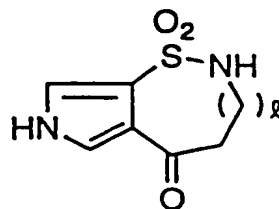


10 wherein X''' represents an eliminative group and R has
11 the same meaning as defined above, with a compound
12 represented by the following formula (IIb) or (IIb'):

13



(IIb)

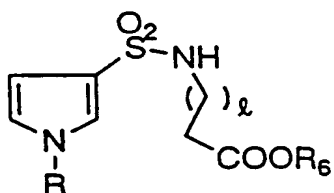


(IIb')

14 wherein l has the same meaning as defined above.

1 20. A compound represented by the following for-
2 mula (XV):

3

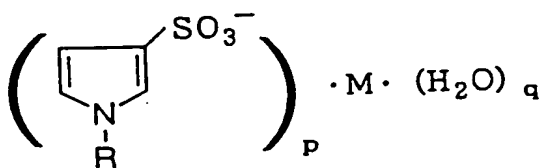


(XV)

4 wherein R, R_6 and l have the same meanings as defined
5 above.

1 21. A compound represented by the following for-
2 mula (XII):

3



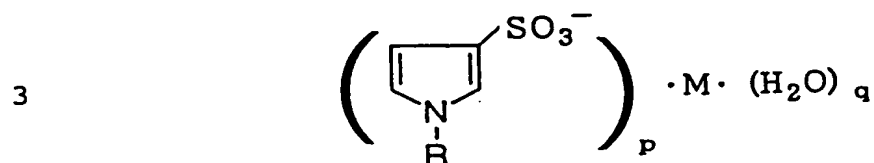
(XII)

4 wherein M, R, p and q have the same meanings as defined
5 above.

1 22. A compound according to claim 21, wherein in
2 the formula (XII), R is a methyl group, M is a sodium
3 ion, p is 1, and q is 0 or 1.

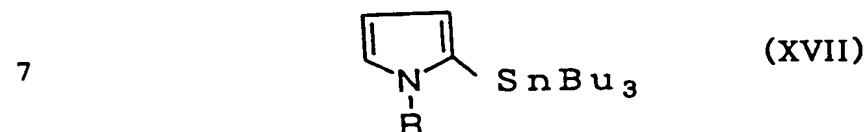
1 23. A process for the preparation of a
2 1-substituted-pyrrole-3-sulfonic acid or a salt there-
3 of, which comprises treating a 1-substituted-pyrrole
4 with sulfur trioxide-pyridine complex.

1 24. A process for the preparation of a compound
2 represented by the following formula (XII):



(XII)

4 wherein M, R, p and q have the same meanings as defined
5 above, which comprises treating a compound, which is
6 represented by the following formula (XVII):



8 wherein R has the same meaning as defined above, with
9 trimethylsilyl chlorosulfonate, followed by alkali
10 hydrolysis.

1 25. A pharmaceutical comprising, as an effective
2 ingredient, a pyrrolesulfonamide derivative or a salt
3 thereof according to claim 1.

1 26. A therapeutic for circulatory diseases, com-
2 prising as an effective ingredient a pyrrolesulfonamide
3 derivative or a salt thereof according to claim 1.

- 1 27. A serotonin-2 receptor antagonist, comprising
- 2 as an effective ingredient a pyrrolesulfonamide deriva-
- 3 tive or a salt thereof according to claim 1.